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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,627	03/04/2002	Hendrik Martinus Wentinck	TS0396 US	9462

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EXAMINER

BHAT, NINA NMN

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/070,627

Applicant(s)

WENTINCK, HENDRIK MARTINUS

Examiner

N. Bhat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. The disclosure is objected to because of the following informalities:

In the specification, applicant is required to include the heading "Brief Description of the Drawings" on Page 5, line 32. Appropriate correction is required.

3. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 25, second occurrence been renumbered --26--.

4. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, it is unclear what applicant means that the cylindrical wall has a diameter. The chamber is cylindrical and the chamber has a diameter. It is unclear what applicant is trying to say in claim 1 with respect to the diameter.

5. Claims 2-6 are rejected as being dependent upon a rejected base claim.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3-4, 7-10, 12, and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Lesieur USP 6,620,389.

Lesieur '389 teaches a reactor which includes a mixing device for mixing a stream of fuel and gaseous oxidant which includes a mixing chamber defined by a cylindrical wall, an injector for injecting a gaseous stream which injects the fuel tangentially along an inner surface wall of the mixing chamber and an injector for injecting a stream of oxidant axially along a central longitudinal axis of the mixing chamber. From figure 1, it can be seen from Lesieur a mixer in a reforming apparatus wherein Lesieur teaches that in order to prevent carbon formation in the catalyst bed of a reforming apparatus, the apparatus can be a cylindrical, oval or some other curvilinear cross sectional shape which includes a catalyst bed (8) disposed in the shell (6). Tube 12 carries a vaporized fuel and tube (14) carries an oxidant reactant the oxidant is usually air. Lesieur teaches that the contents of tubes (12) and (14) could be reversed. Tube 12 opens in to the upper manifold (22) and tube (14) opens into the lower manifold. A plurality of mixing tubes (26) interconnects the fuel manifold (22) with the catalyst bed (8). The mixing tubes(26) include two sets of tangential openings (28) and (28') which result in a counter clockwise swirl of air and steam being injected into the mixture tubes. The clockwise swirl results in the mixing of the fuel/air and steam. The design of the autothermal reformer assemblage fully anticipates the invention as

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claimed. With respect to the limitation regarding the oxygen to carbon ratio this is taught in Figure 3.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 2,5-6,11,13-18 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lesieur in combination with Wentick WO 98/30322.

Lesieur teaches the invention substantially as claimed. Lesieur teaches an apparatus and process which includes a mixing device for mixing a gaseous stream comprising a fuel and gaseous oxidant, the mixing device includes a cylindrical mixing chamber and means for injecting a gaseous stream comprising the flue tangentially along the inner surface of the wall of the mixing chamber and means for injection a stream of oxidant axially along the longitudinal axis of the mixing chamber. Lesieur teaches an autothermal reactor which includes a mixer which is capable for the catalytic partial oxidation of a hydrocarbonaceous fuel using the mixing device.

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However, Lesieur does not teach the diameters of the mixing chamber and the dimensions and location of the injector nor the specific temperature, pressure and conditions of the reactor.

Wentick WO 98/30322 teaches the temperature, pressure and operating conditions for providing the partial oxidation of a fuel. Wentick WO 98/30322 teaches a apparatus for mixing reactive fluids which are capable of reaction at elevated temperature and pressure for subsequent conversion by contact with a catalyst such as partial oxidation catalyst. Wentick WO 98/30322 teaches that the catalytic partial oxidation process operates at an elevated pressure in excess of 10 bar, the high gas hourly space velocities on the order of 20,000 to 100,000 NI/kg/hr. Wentick WO 98/30322 recognizes that for optimal performance for partial oxidation of a fuel the mixing of the of the fluid streams are critical. [Note the abstract, Page 3, lines 1-30 and Page 9, lines 1-33]

It would have been obvious to one having ordinary skill in the art to provide a reactor and fluid mixing system constructed and arranged as claimed by Lesieur to provide partial oxidation of a hydrocarbonaceous fuel. Lesieur teaches a fluid-mixing device which includes the tangential and axial injection of fuel and oxidant. Lesieur teaches how to maximize the velocities to provide optimal performance of the reactor for partial oxidation. Admittedly, Lesieur does not teach the reactor operating conditions such as temperature, pressure and space velocities, the process operating deficiencies in Lesieur are taught by Wentick WO 98/30322 thus rendering applicant's invention as a whole obvious to one having ordinary skill in the art at the time the invention was made.


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11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ahmed et al. teach a methanol partial oxidation reformer. Kramer et al. teach a process for the catalytic partial oxidation of a hydrocarbonaceous feedstock. Boyd et al. teach a inter bed gas-liquid mixing system for down flow reactors. Nguyen et al. teach a fluid distributor assembly for a down flow catalytic reactor. Vanden Bussche et al. teach an apparatus for mixing and reacting at least two fluids. Swint et al. teach a method for cracking residual oils.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


N. Bhat
Primary Examiner
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